

REMARKS

Entry of the foregoing, reexamination and reconsideration of the subject application are respectfully requested in light of the comments which follow.

As correctly noted in the Office Action Summary, claims 16-41 were pending, with claims 24-35 being withdrawn from consideration. By the present response, the claims are unamended. Thus, upon entry of the present response, claims 16-23 and 36-41 remain pending and await further consideration of the merits.

OBVIOUSNESS-TYPE DOUBLE PATENTING

Claims 16-23 and 36-41 were rejected under the judicially created doctrine of obviousness-type double patenting as allegedly unpatentable over claims 15-20 and 27-31 of copending Application No. 10/549,531 on the grounds set forth on pages 6-7 of the Official Action.

Applicants respectfully traverse this rejection.

As expressly admitted on page 4 of the Official Action, at least one limitation in the claims of the present application are absent from the claims of copending Application No. 10/549,531. For example, as admitted on page 4 of the Official Action, the reducibility required by the presently claimed invention is not recited in the claims of the above-mentioned copending application. Nevertheless, it is asserted that the catalyst (disclosed) therein would have a reducibility in the range of the instantly claimed invention because the composition of the mixed oxide in the surface area of the catalyst in copending Application No. 10/549,531 is the same as that of the present invention. Thus, the other properties must also be the same.

Applicants respectfully traverse this assertion for the same reasons explained herein.

That being the case, the grounds for rejection fail to establish that the claims of the present application are anticipated or rendered obvious by the claims of copending Application No. 10/549,531. Thus, reconsideration and withdrawal of the rejection is respectfully requested.

Alternatively, Applicants request that these matters be held in abeyance until such time as one of the applications is otherwise allowable. In the event that the Examiner is ready to allow this application except for this rejection, he is asked to contact the undersigned.

CLAIM REJECTIONS UNDER 35 U.S.C. §112

Claims 16-23 and 36-37 stand rejected under 35 U.S.C. §112, ¶1, on the grounds set forth on page 2 of the Official Action. Reconsideration and withdrawal of the rejection is respectfully requested.

An objective standard for determining compliance with the written description requirement is, "does the description clearly allow persons of ordinary skill in the art to recognize that he or she invented what is claimed." *In re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989).

The subject matter of the claim need not be described literally (i.e., using the same terms or *in haec verba*) in order for the disclosure to satisfy the description requirement. See, e.g., *M.P.E.P. §2163.06*.

The written description requirement does not require applicants to disclose every conceivable embodiment or species that the claims encompass. *Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1344, 60 USPQ2d 1851 (Fed. Cir. 2001) ("an applicant is not required to describe in the specification every conceivable and

possible future embodiment of this invention"); *Utter v. Hiraga*, 845 F.2d 993, 998, 6 USPQ2d 1709 (Fed. Cir. 1988) ("a specification may, within the meaning of 35 U.S.C. §112, ¶1, contain a written description of a broadly claimed invention without describing all species that the claim encompasses"). Moreover, applicants are not constrained by the written description requirement as to the form of claim language chosen to describe the invention. *Cooper Cameron Corp. v. Kvaerner Oilfield Products Inc.*, 291 F.3d 1317, 62 USPQ2d 1846, 1850 (Fed. Cir. 2002) ("An inventor is entitled to claim his invention in more than one way").

As an *en banc* panel of the Federal Circuit has succinctly stated:

The law does not require the impossible. Hence, it does not require that an applicant describe in his specification every conceivable and possible future embodiment of his invention. The law recognizes that patent specifications are written for those skilled in the art . . . *SRI International, Inc. v. Matsushita Elec. Corp.*, 775 F.2d 1107, 227 USPQ 577 (Fed. Cir. 1985)(*en banc*).

It is axiomatic that the claims are not limited by the disclosed embodiments or examples of the specification.

Yet the grounds for rejection run afoul of all of the above-stated legal principles, and seek to hold the Applicant to the above-stated impossible standard of describing every possible species imaginably encompassed within the scope of the claims in order to satisfy the requirements of 35 USC §112, ¶1.

It is alleged in the Official Action that the limitation appearing in claim 16 of "calcining at least once at a temperature of at least 850°C" is not supported by the original disclosure, and thus fails to satisfy the written description requirement of 35 U.S.C. §112, ¶1. This assertion is respectfully traversed.

For example, on page 15 of the original specification, a calcination procedure having at least a first calcination carried out at a temperature of at least 850°C is

explicitly disclosed (see, e.g., page 15, lines 3-7). Moreover, Examples 1-4 described on pages 21-25 of the original disclosure describe calcinations which include at least a first calcination conducted at a temperature of at least 850°C. Thus, there is more than adequate support in the original disclosure for the above-quoted limitation appearing in claim 16.

It is further alleged on page 2 of the Official Action that:

The cited passages cited do not support the claimed surface area range being measured after calcination more than once at the claimed temperature (850°C) . . . and does not mention the range of 850°C or greater for the second calcination.

This is incorrect.

On page 15 of the original specification, there is disclosed a possible second calcination carried out at a temperature of 400°C-900°C. See, e.g., page 15, lines 27-35. The originally disclosed temperature range for the second calcination clearly encompasses temperatures greater than 850°C. Thus, the grounds for rejection appear to rest upon an incorrect assertion of fact.

To reiterate, it is disclosed by the present specification that:

In a first step, . . . [t]he calcination temperature is at least 850°C . . . [i]n a second step, . . . the calcination is generally carried out at a temperature of at least 400°C . . . not to exceed a calcination temperature of 900°C. (Page 15, lines 3-6 and 27-35)

The above quoted explicit disclosure of the present specification, coupled with the additional portions thereof cited herein (e.g., the Examples), provide more than ample support to satisfy the requirements of 35 USC §112, ¶1, interpreted in light of the controlling legal principles outlined above.

Reconsideration and withdrawal of the rejection is respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. §§102/103

Claims 16-18, 20 and 36-41 stand rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, U.S. Patent Application Publication No. 2002/0115563 to Blanchard et al. (hereafter "*Blanchard et al.*") on the grounds set forth on pages 3-4 of the Official Action. For at least the reasons noted below, this rejection should be withdrawn.

The present invention is directed to a composition possessing a unique combination of properties which render it suitable for certain applications. More specifically, the composition of the presently claimed invention possesses a combination of a relatively high cerium content, high reducibility, and relatively high specific surface area. A composition formulated according to the principles of the present invention is set forth in claims 16 and 38.

Claim 16 recites:

16. A composition based on cerium oxide and on zirconium oxide in a Ce/Zr atomic proportion of at least 1, exhibiting a level of reducibility of at least 70%, and a specific surface of at least 15 m²/g after calcining at least once at a temperature of at least 850°C.

Claim 38 recites:

38. A composition based on cerium oxide and on zirconium oxide in a Ce/Zr atomic proportion of at least 1, exhibiting a level of reducibility of at least 70%, and a specific surface of at least 15 m²/g after a first calcination step at a temperature of at least 850°C, and after a second calcination step at a temperature of at least 400°C.

Blanchard et al. neither anticipates, nor renders the obvious the composition recited in claims 16 and 38 above.

Blanchard et al. is directed to a composition based on cerium oxide.

However, as admitted in the Official Action, *Blanchard et al.* fails to disclose a

composition having the claimed combination of properties, in particular, a cerium/zirconium ratio greater than one, as well as a specific surface of at least 15 m²/g and a reducibility of at least 70% after calcining at least once at a temperature of at least 850°C as recited in Claim 16, or a composition having a specific surface of at least 15 m²/g after a first calcination step at a temperature of at least 850°C, and after a second calcination step at a temperature of at least 400°C as recited in Claim 38. Since it is acknowledged that *Blanchard et al.* fails to explicitly disclose the requirements of the composition of the presently claimed invention, the grounds of rejection rest upon the principle of inherency.

When assertions are made based upon features that are not expressly disclosed in the prior art, the Federal Circuit has repeatedly stated that in order to establish the inherency of the missing element it must be shown that the missing element must necessarily be present in the reference, and would be recognized as such by those persons of ordinary skill in the art. *Continental Can Co. USA v. Monsanto Co.*, 948 F.2d 1264, 20 USPQ2d 1746, 1749-50 (Fed. Cir. 1991); *In re Oelrich*, 666 F.2d 578, 581, 212 USPQ 323, 326 (C.C.P.A. 1981) ("inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient"); *Standard Oil Co. v. Montedison, S.p.A.*, 664 F.2d 356, 372, 212 USPQ 327, 341 (3rd Cir. 1981) (for a claim to be inherent in the prior art it "is not sufficient that a person following the disclosure sometimes obtain the result set forth in the [claim]; it must invariably happen").

If rejecting a claim requires reliance upon the alleged inherent features of the prior art, the Examiner must provide a basis in fact and/or technical reasoning to

reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original) (Applicant's invention was directed to a biaxially oriented, flexible dilation catheter balloon (a tube which expands upon inflation) used, for example, in clearing the blood vessels of heart patients. The Examiner applied a U.S. patent to Schjeldahl which disclosed injection molding a tubular preform and then injecting air into the preform to expand it against a mold (blow molding). The reference did not directly state that the end product balloon was biaxially oriented. It did disclose that the balloon was "formed from a thin flexible inelastic, high tensile strength, biaxially oriented synthetic plastic material." *Id.* at 1462 (emphasis in original). The Examiner argued that Schjeldahl's balloon was inherently biaxially oriented. The Board reversed on the basis that the Examiner did not provide objective evidence or cogent technical reasoning to support the conclusion of inherency.).

It is legal error to rely upon inherency as some form of substitute for a teaching or suggestion supporting an assertion of obviousness:

[A] retrospective view of inherency is not a substitute for some teaching or suggestion which supports the selection and use of the various elements in the particular claim combination. *In re Newell*, 13 QSPQ2d 1248, 1250 (Fed. Cir. 1989)

The structure implied by process steps should be considered when assessing patentability where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product. *In re Garnero*, 412 F.2d 276, 279, 162 USPQ 221, 223 (CCPA 1979).

Now, turning to the substance of the rejection, the presently claimed invention is directed to a composition having a combination of properties which render

desirable for particular applications, such as a multifunctional catalyst. As discussed, for example, on page 1, lines 35-36 of the present specification, it is desirable to provide a composition having as high a degree of reducibility as possible when utilizing the composition in the above-mentioned multifunctional catalyst capacity. However, as discussed, for example, at page 2, lines 1-7 of the present specification, the state of the art is such that to produce a composition having a relatively high reducibility, such compositions exhibit a rather low specific surface area.

Thus, according to the principles of the present invention, a composition has been produced in a manner such that the resulting composition exhibits, in combination, a high specific surface area and a high reducibility value.

Applicants traverse the assertion that mixed oxides having a similar chemical composition must necessarily have the same properties as evidenced by the Declaration Pursuant to 37 C.F.R. §1.132 of Emmanuel Rohart, PhD submitted herewith (hereafter "Rohart Declaration"). This assertion is clearly false. As universally recognized in this area of technology, not only does the chemical composition of a material impact its properties, the morphology of the product also plays at least as significant a role in the underlying properties of the material as does the particular chemical constituents. For example, two mixed oxides could have the same chemical constituents, yet one oxide have a higher porosity than the other. The oxide with the higher porosity would exhibit different physical behaviors and properties than the oxide with the relatively lower porosity. For example, mixed oxides exhibiting a higher porosity level typically also dissolve faster. This is but one general example.

As explained above, the chemical constituents and the relative amounts are a factor that go toward determining the properties of the resulting composition, but are by no means the sole factor in providing the composition with its resulting properties. As readily seen in the Examples contained at the end of the present specification, comparative Examples 5-7 are formed from the same composition as Examples 1-4 according to certain embodiments of the present invention, but are subjected to different processing conditions. The result is that the products, although initially formed from the same chemical constituents, have different properties. This evidence alone demonstrates the false assumption upon which the grounds for rejection are based; that materials having the same chemical constituents must necessarily possess identical properties. While this can sometimes be true, it is certainly untrue in this art.

As explained above, novel and unique combination of properties exhibited by the composition of the presently claimed invention can be traceable at least in part to the manner in which the composition is prepared, which is detailed at length in the present specification. It is a further universally recognized principle in this technology that the method by which such materials are prepared can greatly influence the resulting morphology and/or physical properties of the resulting materials. Since the method of forming the materials of the presently claimed invention are significantly different from the methods of forming the mixed oxides in *Blanchard et al.*, it stands to reason that the resulting materials do not necessarily possess different properties. As evidenced in the Rohart Declaration, in Blanchard's Examples 1-3 obtained by the processes described in *Blanchard et al.*, the compositions have a much lower level of reducibility than that recited in claims 16

and 38. For instance, those examples disclosed by *Blanchard et al.* having a Ce/Zr atomic ratio which is greater than one, as required by the presently claimed invention, namely examples 1 and 3, the reducibility of these materials is about 58% (example 1) and about 46% (example 3) as evidenced by the Rohart Declaration.

It is alleged in the Official Action that the process of forming the mixed oxides taught by Blanchard et al. is "substantially identical to that instantly disclosed" in the present specification. This assertion is respectfully traversed.

For example, according to the process of the present invention, the precipitate is subjected to a two-step calcination procedure. At least a first step takes place under inert gas or in a vacuum at a temperature of at least 850°C, and the second step is made under an oxidizing atmosphere, such as air. See, e.g. page 3, lines 5-10 of the present specification. There is absolutely no disclosure whatsoever in *Blanchard et al.* of two calcination steps taking place in different atmospheres. In fact, even though the grounds for rejection allege the process for forming a composition of the present invention and the process described by Blanchard et al. are "substantially identical," this part of the disclosed process of the present invention is never even mentioned.

As evidenced by the Rohart Declaration, when compositions with a Ce/Zr atomic ratio of at least 1, such as those in Blanchard's Example 1, are synthesized by a process wherein an initial liquid mixture of cerium and zirconium salts is subsequently submitted to a heat treatment at about 150°C and the precipitate is calcinated at 900°C under air, then the calcinated product presents a level of reducibility which is at most 58%. The shaping of the product by extrusion, as in Blanchard, cannot modify intrinsic properties such as the surface area or the

reducibility of the composition. Furthermore, when compositions with a Ce/Zr atomic ratio of at least 1, such as those in Blanchard's Example 3, which are prepared by precipitation with a base in the presence of bicarbonate under conditions such that the pH of the reaction mixture remains neutral or basic. The precipitate, after calcination at 900°C under air, presents a level of reducibility of at most about 46%. The shaping of the product by extrusion, as in Blanchard, cannot modify intrinsic properties such as the surface area or the reducibility of the composition.

Thus, the level of reducibility for compositions prepared according to Blanchard's Examples 1-3 and having a Ce/Zr atomic ratio of at least 1, the level of reducibility is much lower than that recited in claims 16 and 38. The shaping of the product of Blanchard's Examples 1-3 by extrusion cannot modify intrinsic properties such as the surface area of the reducibility of the composition.

As such, the grounds for rejection are based upon theory and conjecture only, which is entirely inconsistent with the realities of silica chemistry and preparation techniques, as readily understood by those skilled in the art. Therefore, *Blanchard et al.* clearly fails to either explicitly or implicitly disclose a composition having the required reducibility, in combination with the other properties of the recited composition of the presently claimed invention, and claims 16 and 38 are patentable over *Blanchard et al.*

The remaining claims rejected on the above-noted grounds depend from claims 16 and 38. Thus, these claims are also distinguishable over *Blanchard et al.* for at least the same reasons noted above.

CLAIM REJECTIONS UNDER 35 U.S.C. §103

Claims 19 and 21-23 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Blanchard et al.* on the grounds set forth on page 6 of the Official Action.

Claims 19 and 21-23 depend from claim 16. Thus, these claims are also distinguishable over *Blanchard et al.* for at least the same reasons noted above. Reconsideration and withdrawal of the rejection is respectfully requested.

CONCLUSION

In view of the foregoing, it is submitted that all claims are in condition for allowance. Should any questions arise in connection with this application or should the Examiner believe that a telephone conference with the undersigned would be helpful in resolving any remaining issues pertaining to this application, the undersigned respectfully requests that she be contacted at the number indicated below.

The Director is hereby authorized to charge any appropriate fees under 37 C.F.R. §§ 1.16, 1.17 and 1.20(d) and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

Date: October 28, 2010

By:



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